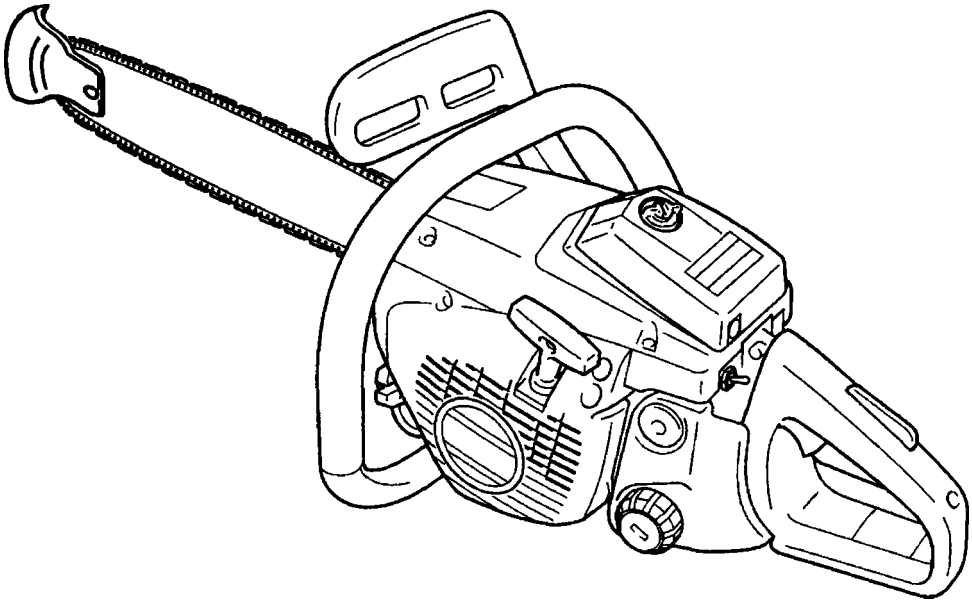


OPERATOR'S MANUAL

ECHO CHAIN SAW

CS-510

CAUTION

Read Rules for Safe Operation and Instruction Carefully

ECHO POWER EQUIPMENT (CANADA)
401 Consortium Court,
London, Ontario
N6E 2S8

X750-001 74 0
X750 319-450 0

RULES FOR SAFE OPERATION

1. Fatigue causes carelessness. Be more cautious before rest periods and before the end of your shift.
2. Personal protective clothing required by your safety organizations, government regulations, or your employer should be used; otherwise, sung fitting clothing, protective eyewear, safety footwear and hand, leg and hearing protection should be worn.
   Note: Personal protective clothing should meet the requirements of applicable Standards.
3. Before fuelling, servicing or transporting your chain saw switch off the engine. To help prevent fire, restart your chain saw at least 3 m (10 ft) from the fuelling area.
4. When using a chain saw a fire extinguisher should be available.
5. When felling, keep at least 2 tree lengths between yourself and your fellow workers.
6. Plan your work; assure yourself of an obstacle-free work area and, in the case of felling, of an escape path from the falling tree.
7. Follow instructions in your operator's manual for starting the chain saw and control the chain saw with a film grip on both handles when it is in operation. A keep handles dry, clean and free of oil. A chain saw should never be carried with the engine running.
8. When transporting your chain saw, use the appropriate transportation covers that should be available for the guide bar and saw chain.
9. Never operate a chain saw that is damaged, improperly adjusted, or is not completely and securely assembled. Be sure that the saw chain stops moving when the throttle control trigger is released. Never adjust the guide bar or saw chain when the engine operating.
10. Beware of carton monoxide poisoning. Operate the chain saw in well-ventilated areas only.
11. Do not attempt a pruning or liming operation in a standing tree unless specifically trained to do so.
12. Guard against kickback. Kickback is the upward motion of the guide bar, which occurs when the saw chain, at the nose of the guide bar, contact an object. Kickback can lead to dangerous loss of the chain saw.

    TO AVOID KICKBACK:
    (a) Contact of the guide bar tip with any object should be avoided.
    (b) Tip contact may cause the guide bar to move suddenly upward and backward which may cause serious injury.
    (c) Always use two hands when operating the chain saw.
    (d) Use a firm grip, thumbs and fingers encircling the handles.
    (e) Don't overreach.
    (f) Avoid cutting above shoulder height.
    (g) Follow the manufacture's instructions for sharpening and maintenance of the saw chain.
13. When boring with the chain saw, the initial cut should be introduced with the lower part of the nose (tip) until the hole is sufficiently large so as to introduce the entire nose (tip) of the guide bar. This manoeuve should reduce the danger of kickback.
14. A chain saw is intended for two-handed use. Serious injury to the operator, helpers and/or bystanders may result from one-handed operation.

CAUTION

A. Allow your chain saw to cool before refueling, and do not smoke.

B. Do not allow other persons or animals close to running chain saw or close to where a tree is being felled.

C. Use extreme caution when cutting small size brush and saplings because slender material may catch the saw chain and be whipped toward you.

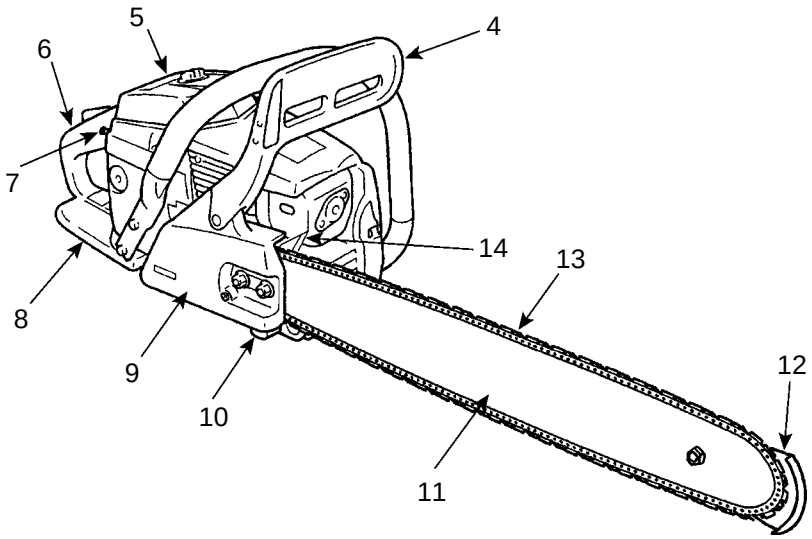
D. When cutting a limb that is under tension is alert for spring-back.

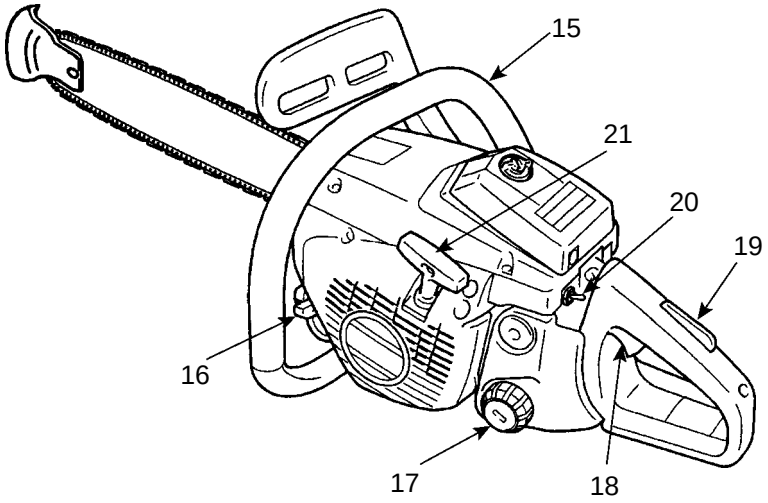
CONTENTS

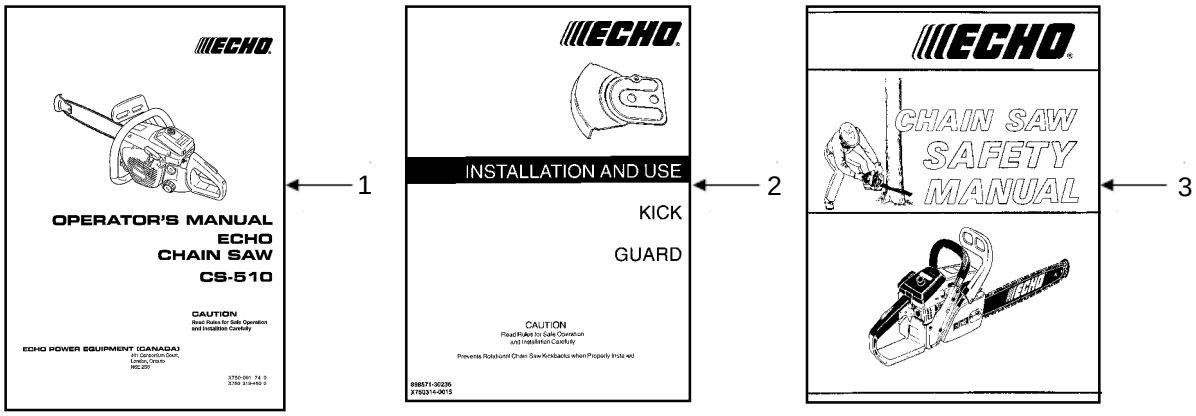
RULES FOR SAFE OPERATION 2
NOMENCLATURE HAVE PARTS 4
OPERATOR SAFETY 6
CORRECT USE OF CHAIN BRAKE 7
PREPARATION FOR USE 8
FUEL AND LUBRICANT 9
OPERATION 10
CUTTING INSTRUCTION 12
MAINTENANCE AND CARE 17
SETTING THE SAW CHAIN 20
CHAIN AND GUIDE BAR COMBINATION 22
SERVICE GUIDE 23
TROUBLE SHOOTING 24
STORAGE AFTER USE 25
TECHNICAL DATA 25

This spark ignition system complies with Canadian ICES-002.

NOMENCLATURE HAVE PARTS







NOMENCLATURE HAVE PARTS

1. **Operator's manual** - Included with unit. Read before operation and keep for future reference to learn proper, safe operating techniques.
2. **Installation and use KICK GUARD** - Describe how to install the kick guard and operate the saw with kick guard.
3. **Safety manual** - Describe operating and safety instructions for this chain saw.
4. **Front hand guard** - Guard between the front handle and the saw chain for protecting the hand from injuries and aiding in control of the chain saw if the hand slips off the handle. This guard is used to activate the chain brake which is to stop the saw chain rotation.
5. **Air cleaner cover** - Covers air filter.
6. **Rear handle (for the right hand)** - Support handle located towards the rear of the engine housing.
7. **Choke control knob** - Device for enriching the fuel/air mixture in the carburettor to aid cold starting.
8. **Rear hand guard** - Extension on the lower part of the rear handle for protecting the hand from the chain if it breaks or degrooves.
9. **Clutch cover** - Protective cover to the guide bar, saw chain, clutch and sprocket when the chain saw in use.
10. **Chain catcher** - A safety projection designed to reduce the risk of the operator's right hand from being hit by a chain which has broken or derailed from the guide bar during cutting.
11. **Guide bar** - The part that supports and guide the saw chain.
12. **Bar tip guard** - Anti-kickback device attached on the bar nose.
13. **Saw chain** - Chain, serving as a cutting tool.
14. **Spiked bumper** - Device, fitted in front of the guide bar mounting point, acting as a pivot when in contact with a tree or log.
15. **Front handle (for the left hand)** - Support handle located at the front of the engine housing.
16. **Oil tank cap** - For closing the oil tank.
17. **Fuel tank cap** - For closing the fuel tank.
18. **Throttle trigger** - Device activated by the operator's finger, for controlling the engine speed.
19. **Throttle trigger lockout** - A safety lever which must be depressed before the throttle trigger can be activated in order to prevents the accidental operation of the throttle trigger.
20. **Ignition switch** - Device for connecting and disconnecting the ignition system and thus allowing the engine to be started or stopped.
21. **Starter handle** - Pull handle slowly until starter engages then quickly and firmly. When engine starts, return handle slowly.
    DO NOT let handle snap back or damage to unit will occur.

OPERATOR SAFETY

HOT HUMID WEATHER

- Heavy protective clothing can increase operator fatigue which may lead to heat stroke.
  Schedule heavy work for early morning, or late afternoon hours when temperatures are cooler.

VIBRATION AND COLD

- It is believed that a condition called Raynaud's Phenomenon, which affects the fingers of certain individuals, may be brought about by exposure to vibration and cold.
  Exposure to vibration and cold may cause tingling and burning followed by loss of color and numbness in the fingers.
  The following precautions are strongly recommended because the minimum exposure which might trigger the ailment is unknown.
- Keep your body warm, especially the head and neck, feet and ankles and hands and wrists.
- Maintain good blood circulation by performing vigorous arm exercises during frequent work breaks and also by not smoking.
- Limit the number of hours of operation.
  Try to fill each day with jobs where operating the chain saw, or other hand-held power equipment is not required.
- If you experience discomfort redness and swelling of the fingers, followed by whitening and loss of feeling, consult your physician before further exposing yourself to cold and vibration.

REPETITIVE STRESS INJURY

- It is believed that overusing the muscles and tendons of the finger, hands, arms and shoulders may cause soreness, swelling, numbness, weakness and extreme pain to the areas just mentioned.
  Certain repetitive hand activities may put you at a high risk for developing a repetitive stress injury (RSI).
- An extreme RSI condition is Carpal Tunnel Syndrome (CTS) which could occur when your wrist swells and squeezes a vital nerve that runs through the area. Some believe that prolonged exposure to vibration may contribute to CTS. CTS can cause severe pain for months or even years.

To reduce the risk of RSI/CTS, do the following:

- Avoid using your wrist in a bent, extended or twisted position.
- Take periodic breaks to minimize repetition and rest your hands.
- Reduce the speed and force in which you do the repetitive movement.
- Do exercises to strengthen hand and arm muscles.
- See a doctor if you feet tingling, numbness or pain in your fingers, hands, wrists or arms.
  The sooner RSI/CTS is diagnosed, the more likely permanent nerve and muscle damage can be prevented.

EYE AND HEARING PROTECTION

- Wear eye protection goggles that meet ANSI Z 87.1 requirements.
  Goggles meeting the requirements have the mark "Z 87" stamped on them.
- Wear hearing protection.
  If this guideline is not followed, hearing loss can occur.
  The Occupational Health and Safety Act of 1970 (OHSA) requires the use of hearing protection if you use the unit more than two hours per day.
  ECHO recommends wearing hearing protection at all times.

WEAR PROPER CLOTHING

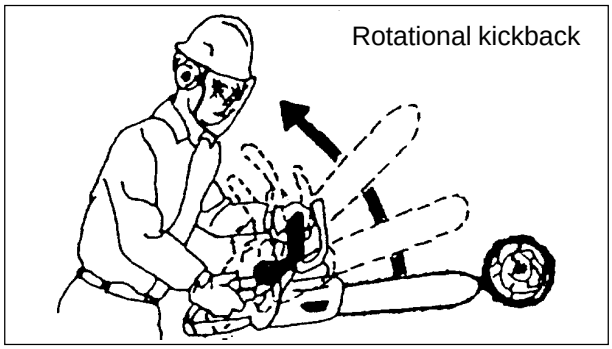
- Snug fitting durable clothing should be worn.
  Pants should have long legs, DO NOT WEAR SHORTS.
  Do not wear loose fitting clothing, scarves, neckties, jewelry or any item that may become tangled in surrounding growth or the trimmer itself.
- Wear shoes with non-skid soles.
  DO NOT wear open toed shoes or operate unit barefooted.
- Wear no-slip, heavy duty work gloves to improve your grip on the trimmer handles.
  The gloves also help reduce the transmission of machine vibration to your hands.
  Special vibration reducing gloves such as ECHO's PRO-COMFORT are designed to provide additional comfort.

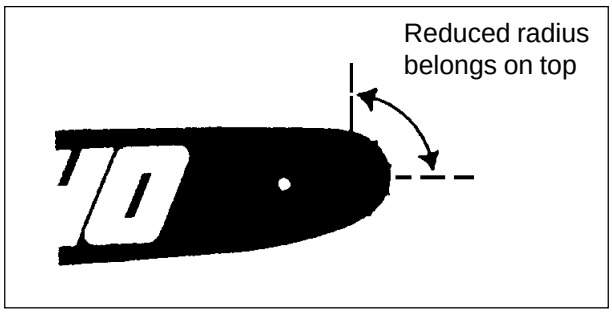
SPARK ARRESTOR MUFFLER

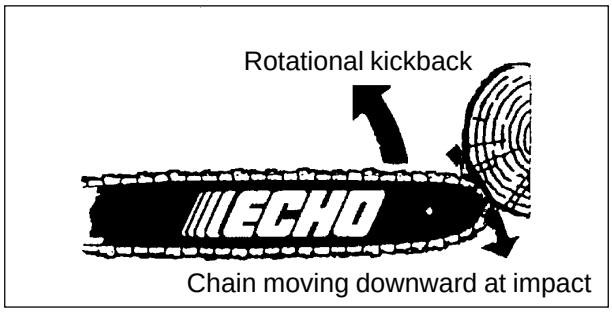
- The spark arrestor muffler controls the exhaust noise and prevents hot, glowing particles of carbon from leaving the muffler.
  Make sure the spark arrestor screen is in good repair and properly seated in the muffler.
- Certain internal combustion engines operated on forest, brush, and/or grass-covered areas in the states of Washington, Oregon, Idaho, California Minnesota, New Jersey and Maine, are required to be equipped with a spark arrestor.

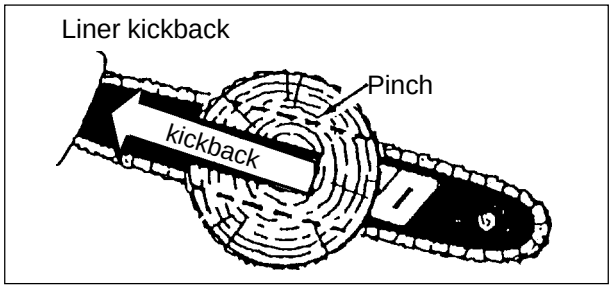
This requirement also applies to all U.S. Forest Service lands.
In some of these areas, the spark arrestor system must be certified per USDA Forest Service Regulation SAE J 335.
Check with your local or state authorities for specific regulations in your area.
Failure to follow these requirements is a violation of the law.

CORRECT USE OF CHAIN BRAKE









WARNING ⚠ DANGER
KICKBACK SAFETY PRECAUTION FOR CHAIN SAW USERS KICKBACK MAY OCCUR WHEN THE NOSE OR TIP OF THE GUIDE BAR TOUCHES AN OBJECT OR WHEN THE WOOD CLOSES IN AND PINCHES THE SAW CHAIN IN THE CUT.

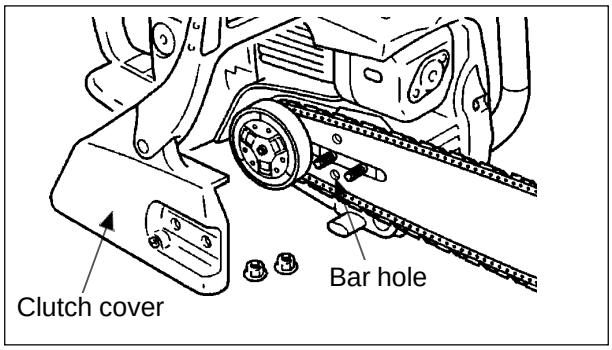
The installation of a chain brake may be mandatory by law or as stipulated by insurance regulations in your area of operation.
You should inquire through local government offices, your employer or your local dealer to ensure that your chain saw conforms to the required safety standard.
ECHO chain brakes have been designed and tested to comply with international safety standards as follows.

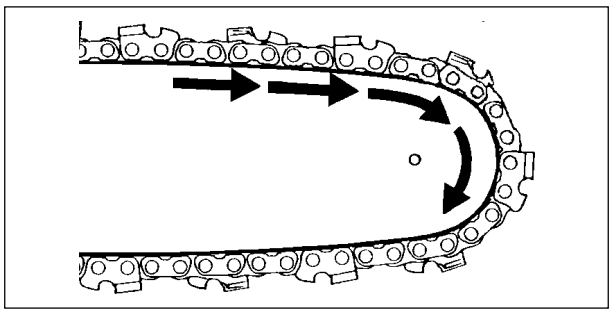
Canada : CSA Standard Z 62.1,
Standard Z 62.3 CHAIN SAWS

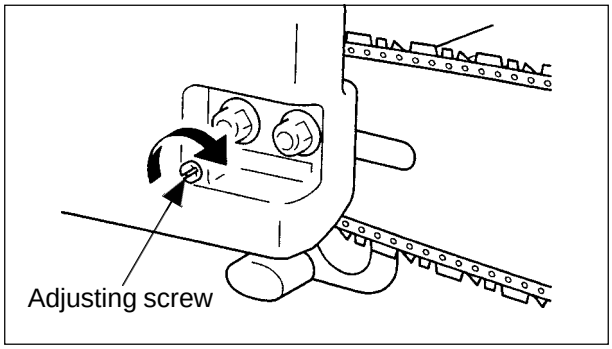
USA : ANSI Standard B175.1-2000
Safety Requirement for chain saws

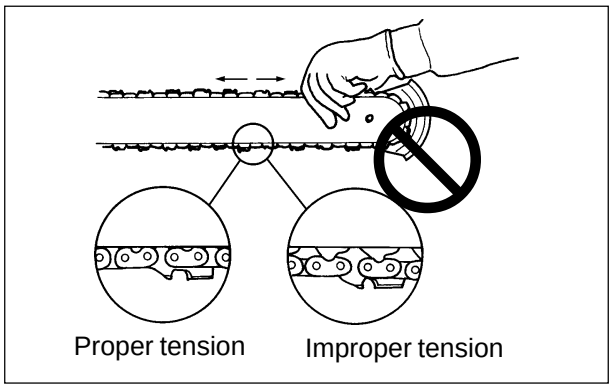
WARNING ⚠ DANGER
CSA Z 62.1 STIPULATES THAT THE BRAKE SHALL STOP THE CHAIN 0.12 SECONDS AT AN ENGINE SPEED OF 13,500 r/min.
IT IS THE RESPONSIBILITY OF THE OWNER / OPERATOR TO ENSURE THAT THE BRAKE IS SERVICED, ADJUSTED AND TESTED STRICTLY IN ACCORDANCE WITH THE INSTRUCTIONS AS DETAILED HEREIN IN ORDER TO ENSURE THAT THE BRAKE PERFORMANCE IS MAINTAINED IN COMPLIANCE WITH THE STANDARD CSA Z 62.1.

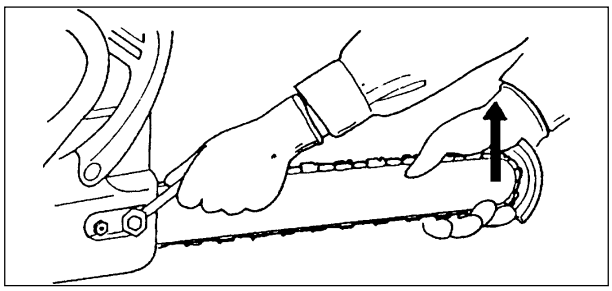
PREPARATION FOR USE









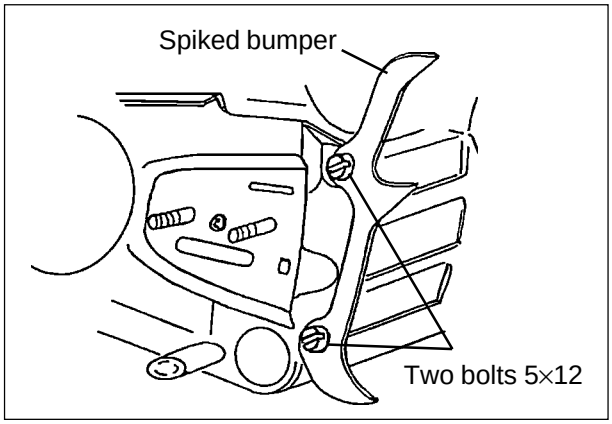


CAUTION

- All adjustment, should be made cold.
- Always wear gloves when working on chain.

MOUNTING GUIDE BAR AND CHAIN

- Unscrew two nuts and remove clutch cover.
- Install the spiked bumper on the front of machine. (Use two bolts 5×12)



- Mount bar and slide toward clutch to make saw chain installation easier.
- Install saw chain as shown.
  (Ensure cutters are pointing in the right direction)
- Install the clutch cover tighten nuts finger tight. Ensure that chain tension adjuster fits into bar hole.

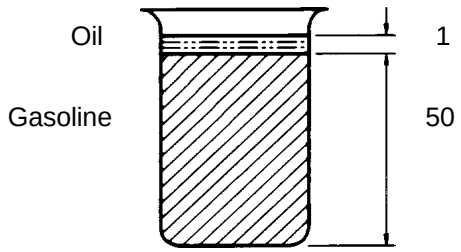
NOTE

Ensure that the chain is installed with the cutters directed forward on the top of the bar.

ADJUSTMENT, CHAIN TENSION

- Hold the bar nose up and turn the adjuster clockwise until the chain fits snugly against the underside of the bar.
- Tighten both nuts with the bar nose held up.
- Start the engine and run at low speed.
  Stop and readjust if necessary.

FUEL AND LUBRICANT



FUEL STATEMENT

GASOLINE-Use 89 Octane [$\frac{R+M}{2}$] gasoline or gasohol known to be good quality.
Gasohol may contain maximum 10% ethyl (grain) alcohol or 15% MTBE (methylteriary-butyl ether). Gasohol containing methyl (wood) alcohol is not approved.

TWO-STROKE OIL - Use 50 : 1 two-stroke ECHO oil only.
Engine problems due to inadequate lubrication caused by failure to use 50 : 1 ECHO oil will void the warranty on your ECHO product.

MIXING - Mix oil and gasoline/gasohol according to the instructions on the ECHO oil label.

50 : 1

(US)		(METRIC)	
GAS	OIL	GAS	OIL
Gal	Fl oz	L	mL
1	2.6	4	80
2	5.1	8	160
5	12.8	20	400

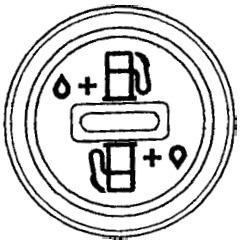
IMPORTANT

Stored fuel ages.
Do not mix more fuel than you expect to use in thirty (30) days, ninety (90) days when a fuel stabilizer is added.
Stored two-stroke fuel may separate.
ALWAYS shake fuel container thoroughly before each use.

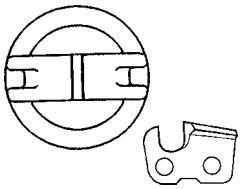
CAUTION

Whenever opening up the fuel tank, always loosen the cap very slowly and wait for the tank pressure to be equalized before removing the cap.

CAP INDICATION
Fuel/oil tanks are indicated by the following illustrations



FUEL TANK CAP



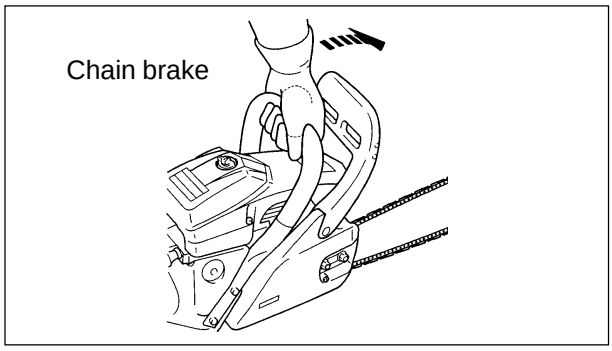
OIL TANK CAP

CHAIN LUBRICANT

Proper lubrication of the chain while in operation reduces friction between the chain and the guide bar to a minimum and assures a longer service life.

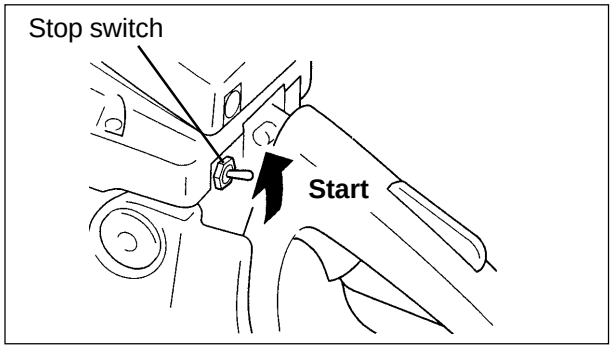
- Use ECHO bar and chain oil of high quality for this purpose.
- Do not use used or reclaimed oil to avoid various oiler problems.
- When refueling, also refill chain oil.

OPERATION



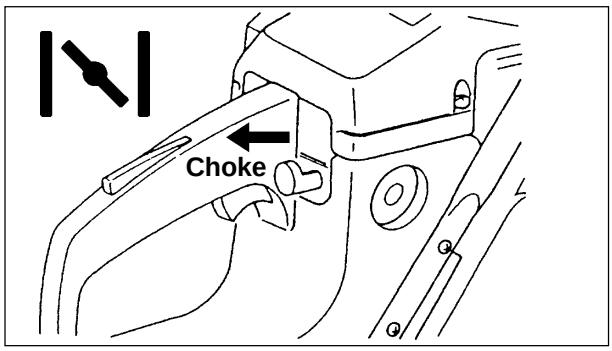
WHEN THE ENGINE IS COLD

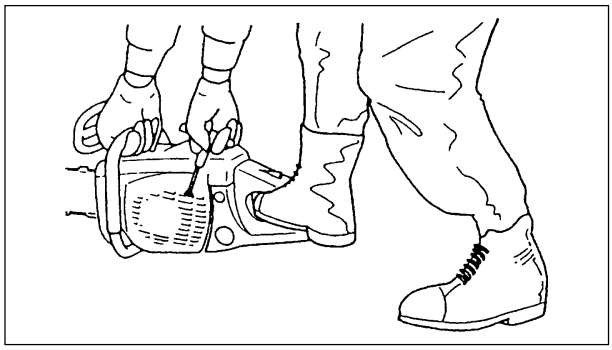
- Fill the fuel tank with fuel.
- Fill the chain oil tank with lubricant.
- Press hand guard forward. (Chain brake ACTIVATED position)
- Turn ignition switch upside. (“RUN” position)
- Pull choke control knob all the way out. (Choke position)



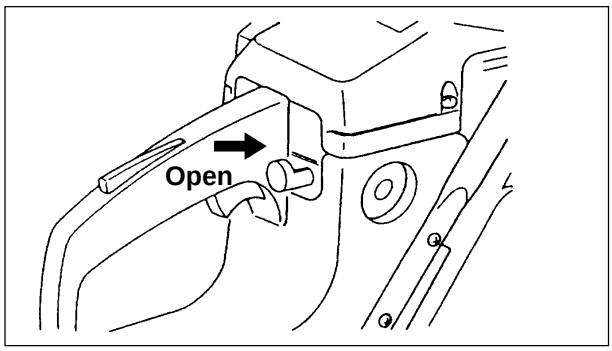
CAUTION
Make sure bar and chain are free from any obstruction when starting the saw.

- Make sure guide bar and saw chain are not touching anything when starting the saw.
- Securely hold the saw as shown and pull starter handle several times until first firing sound.
- Push choke control knob all the way in.
- Pull starter handle to start the engine.
- When engine starts, immediately pull throttle trigger up to release the latch, then release throttle trigger.





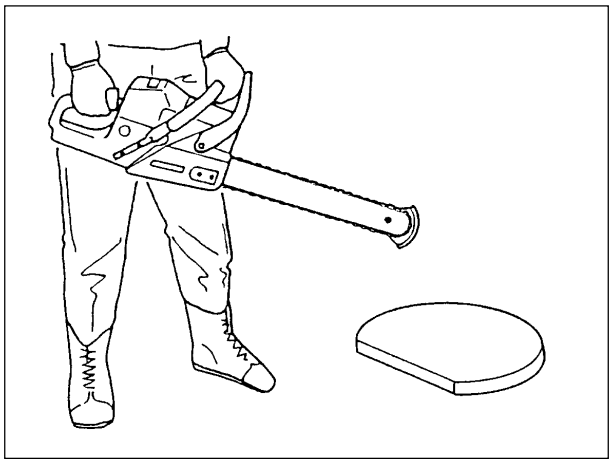
CAUTION
The chain will attempt to rotate when engine is started with throttle latch engaged.
After engine starts, release throttle trigger to idle engine, otherwise brake damage may occur.
Never use the latch for cutting.
Use it only when starting the engine.



WHEN THE ENGINE IS WARM

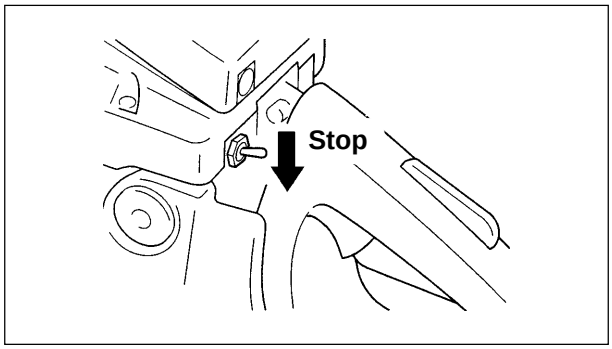
- Confirm fuel and chain oil in the tanks.
- Press hand guard forward. (Chain brake ACTIVATED position)
- Turn ignition switch upside. (“RUN” position)
- Make sure guide bar and saw chain are not touching anything when starting the saw.
- Securely hold the saw as shown and pull starter handle.
- Choke may be used if necessary but after first firing sound, pull throttle trigger a little to release throttle locking and choke.

RUNNING



- When engine starts, keep idling for a few minutes.
- Pull throttle trigger gradually and increase revolution of the engine.
- The chain starts running when the engine reaches to 3,800 r/min approximately.
- Confirm proper acceleration and lubrication of chain and bar.

STOPPING

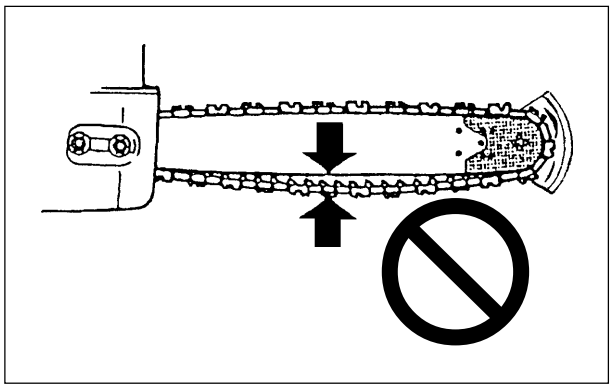


- Release throttle trigger and turn switch down. (“STOP” position)

NOTE

When engine does not stop, pull choke control knob out fully to stop engine. Check and repair stop switch before starting the engine again.

CHECKING CHAIN TENSION

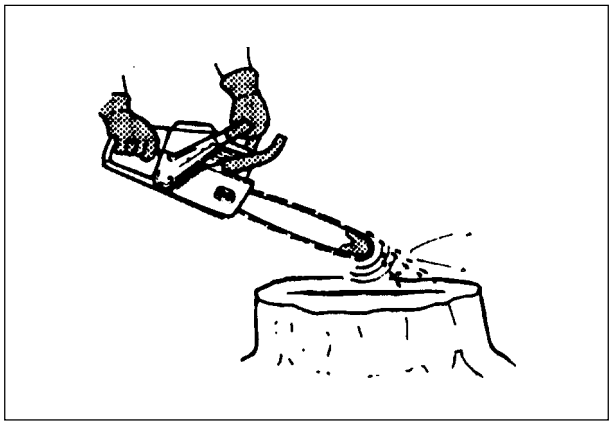


- Chain tension should be checked frequently during work and corrected of necessary.
- Tension the chain as tight as possible, but so it can still be pulled easily along the bar by hand.

CAUTION

- Do not operate with a loose chain.

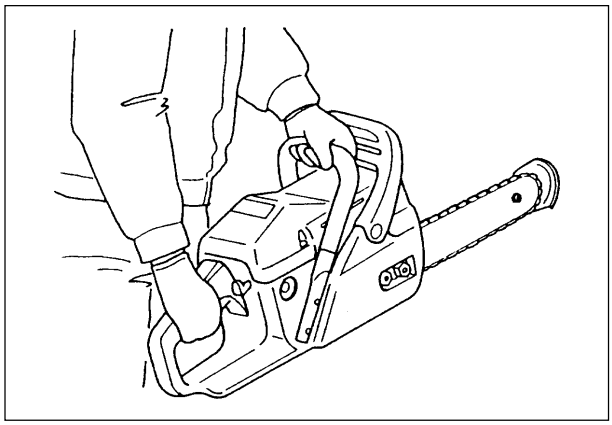
CHAIN LUBRICATION TEST

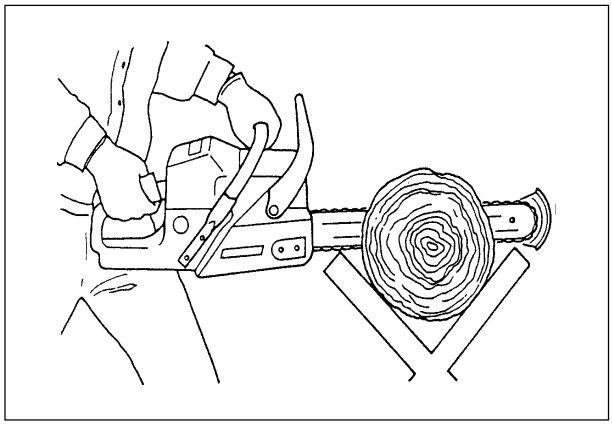


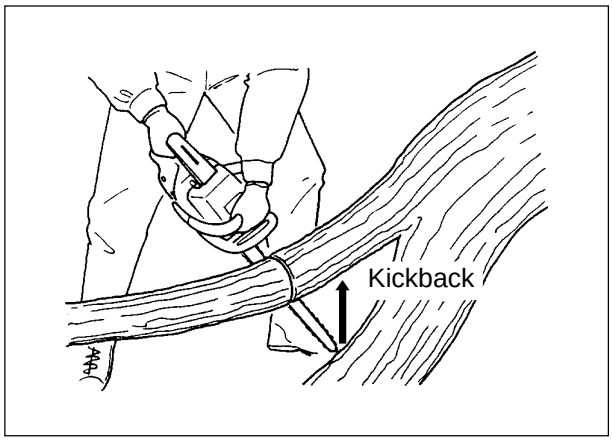
Hold the chain just above a dry surface and open the throttle to half speed for 30 seconds.

A thin line of “ thrown ” oil should be seen on the dry surface.

CUTTING INSTRUCTION







GENERAL

NOTE

Read the ECHO “CHAIN SAW SAFETY MANUAL” included with your chain saw for additional cutting and safety instructions.

In all circumstances the operation of the chain saw is a one-man job.
It is difficult at times to take care for your own safety, so don’t assume the responsibility for a helper as well.
After you have learned the basic techniques of using the saw, your best aid will be your own good common sense.
The accepted way to hold the saw is to stand to the left of the saw with your left hand on the front handlebar and your right hand on the rear handle so you can operate the throttle trigger with your right index finger.
Before attempting to fell a tree, cut some small logs or limbs.
Become thoroughly familiar with the controls and the responses of the saw.

Start the engine, see that it is running properly.
Squeeze the trigger to open the throttle wide open and start the cut. If the chain is properly sharpened, the cutting should be relatively effortless.
It is not necessary to press down hard to make the saw cut.
Pushing the saw too hard will slow the engine and cutting will actually be more difficult.

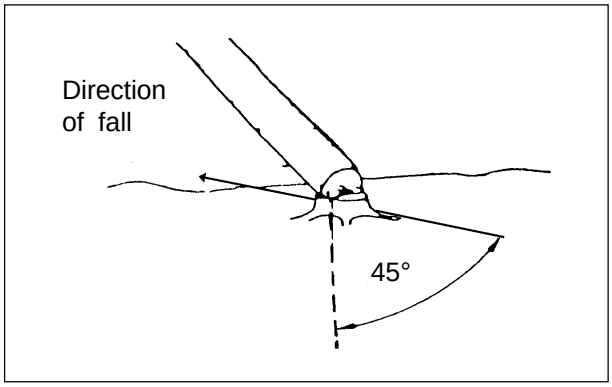
Some material may adversely affect the housings of your ECHO chain saw.
(Example palm Tree Acid, fertilizer etc.)
To avoid housing deterioration, carefully remove all packed sawdust around clutch and guide bar area and wash with water.

CAUTION

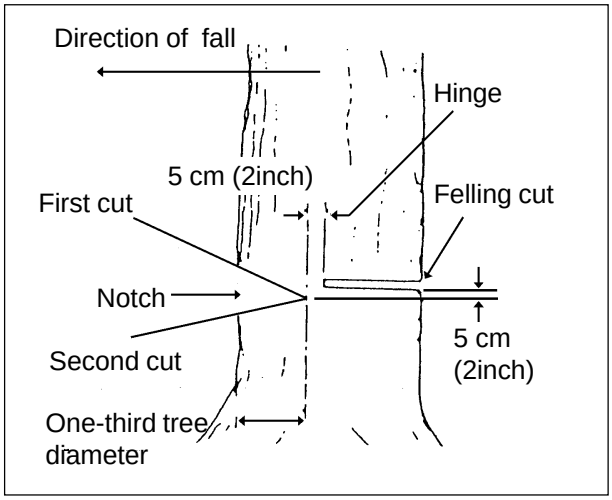
Do not let the tip of the bar touch anything while the engine is running.
At cutting speed the chain is moving, at a high rate of speed.
Should the tip contact a limb or log while the chain is moving, the tip will be pushed upward with considerable force.
This is known as kick-back. Avoid it!

SEE OPERATOR’S MANUAL INSERT FOR INSTALLATION AND USE WITH THE KICK GUARD.

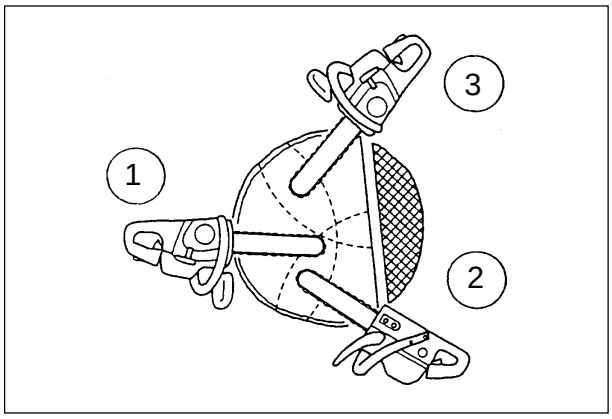
FALLING THE TREE



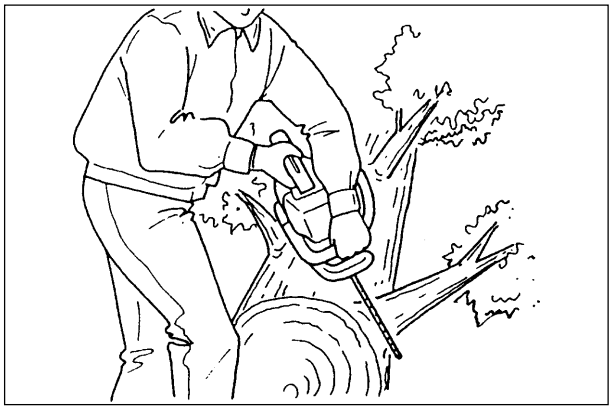
A falling tree can seriously damage anything it may hit - a car, a house, a fence, a power line, or another tree.
There are ways to make a tree fall where you want it, so first decide where that is!
Before cutting, clear the area around the tree.
You will need good footing while working and you should be able to work the saw without hitting any obstacles.
Next, select a path of retreat.
When the tree begins to fall you should retreat away from the direction of fall at a 45-degree angle to avoid the trunk kicking back over the stump.



Begin the cut on the side to which the tree is to fall.
Cut a notch about 1/3 of the way into the tree. The position of this notch is important since the tree will try to fall “into” the notch.
The felling out is made on the side opposite the notch and at a level about 5 cm (2inch) above the bottom of the notch.
Do not try to cut through to the notch with the felling cut.
The remaining wood between the notch cut and felling cut [about 5 cm (2inch)] will act as a hinge when the tree falls, guiding it in the desired direction.
When the tree starts to fall, kill the engine, place the saw on the ground and make your retreat quickly.

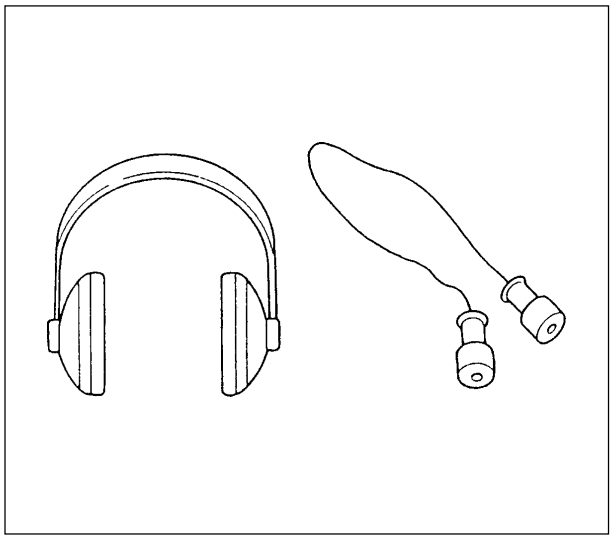


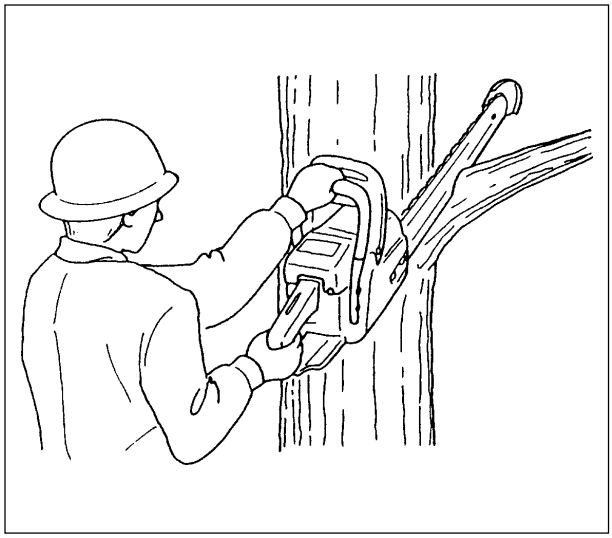
To fell big trees with a diameter exceeding twice the bar length, start the notching cuts from one side and draw the saw through to the other side of the notch.
Start the back cut on one side of the tree, pivoting the saw through to form the desired hinge on that side.
Then remove the saw for the second cut. Insert the saw in the first cut, very carefully so as not to cause kickback.
The final cut is made by drawing the saw forward in the cut to reach the hinge.

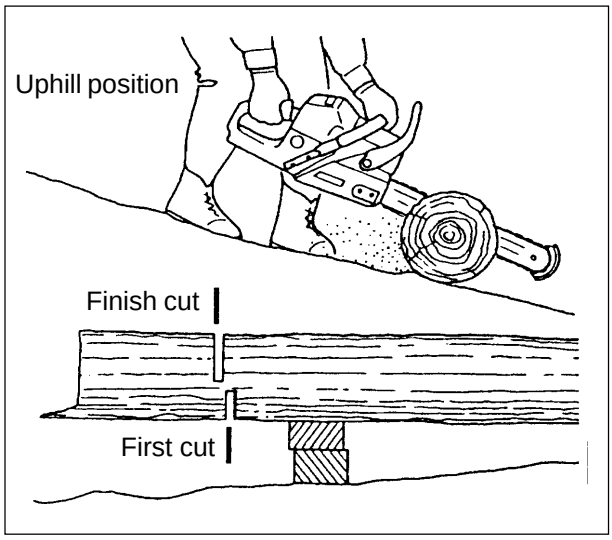


LIMBING

Limbing a fallen tree is much the same as bucking.
Never limb on the tree that you are standing.
When limbing, caution is the word.
Be careful of the tip touching other limbs.
Always use both hands.







CAUTION

Wear suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.

Don't cut with the saw overhead or the bar in a vertical position. If the saw should kick back, you may not have well enough control to prevent possible injury.

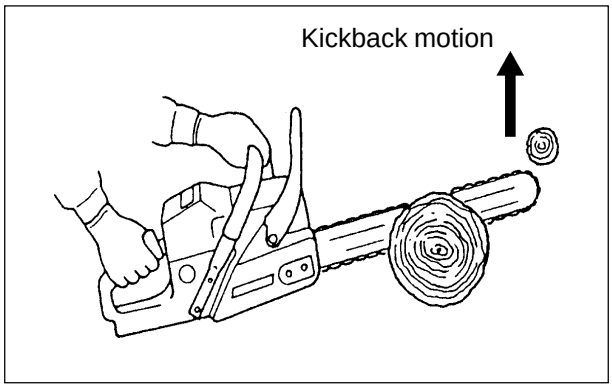
BUCKING

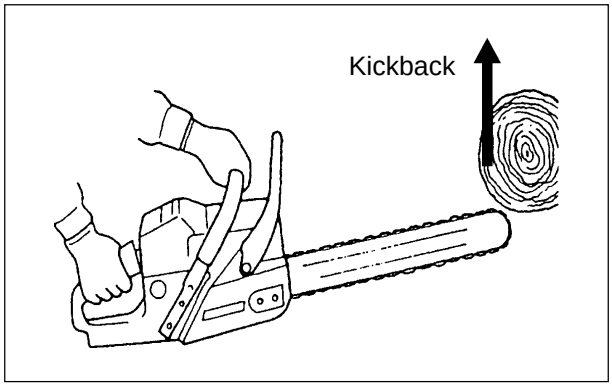
Bucking is the sawing of a log or fallen tree into smaller pieces.
There are a few basic rules which apply to all bucking operations.
Keep both hands on the handles at all times.
Support logs if possible.
When cutting on a slope or hillside, always stand uphill.

Keep in mind that the wood is heavy and that it will bend and pinch the saw if improperly supported. The trunk will weaken at the point where you make the cut unless the tree is lying on perfectly flat ground or supported as shown.
If you make the cut with the tree on the ground, don't let the saw's chain dig into the earth; it is harmful for the saw, and you stand a good chance of being struck by flying debris.
To cut the trunk, use the bucking and two-cut sequence shown.
The first cut should be no deeper than one-third the trunk diameter.

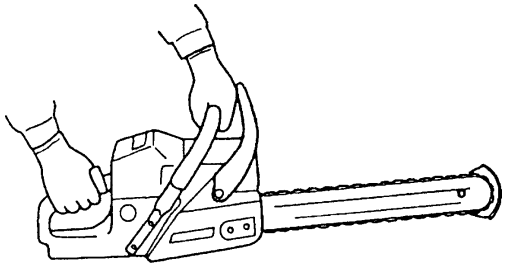
WARNING ⚠ DANGER

- **KICKBACK IS GENERATED WHEN THE ROTATION OF THE CHAIN IS ARRESTED FOR SOME REASON.**
  THE MOST DANGEROUS EFFECT OF THIS ACTION OCCURS WHEN THE NOSE OF THE BAR CONTACTS ANOTHER OBJECT, THE CHAIN IS MOMENTARILY STOPPED AND ALL THE ENERGY OF ENGINE THROWS THE BAR UPWARDS AND BACKWARDS TOWARDS THE OPERATOR.
- **THE CHAIN SAW INDUSTRY AND GOVERNMENT AGENCIES HAVE ATTEMPTED TO PRESCRIBE VARIOUS SAFETY DEVICES, BUT THE BEST PROTECTION IS TO AVOID KICKBACK.**
- **COMPLY WITH THE SAFETY PRECAUTIONS AS LISTED ON PAGE 2 OF THIS MANUAL AND SAFETY MANUAL.**

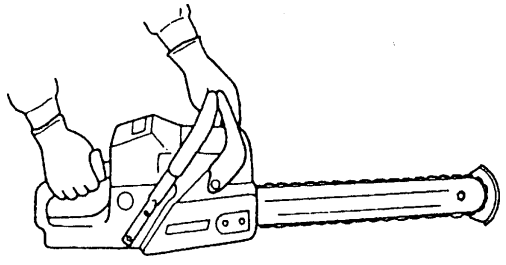




Chain brake function
When the lever is pushed forward, chain brake instantly work to stop the chain.



Chain brake release
When the lever is fully pulled, toward the operator, brake is released.



CHAIN BRAKE OPERATION

- Set the lever in the released position before starting to cut.
- If the brake is tripped by kick back reaction, the chain will stop immediately release the throttle to avoid possible damage prevent to the engine or clutch.
- Do not attempt to operate the engine with the brake engaged.

TESTING THE BRAKE

- Start the engine on a solid level surface and run at a fast idle until warm.
- Hold the saw firmly by the handles and accelerate the engine to a fast idle.
- Slowly operate the chain brake lever while holding the saw firmly on the ground.
  When the brake lever trips, the chain should stop.
  Immediately release the throttle trigger.

CAUTION

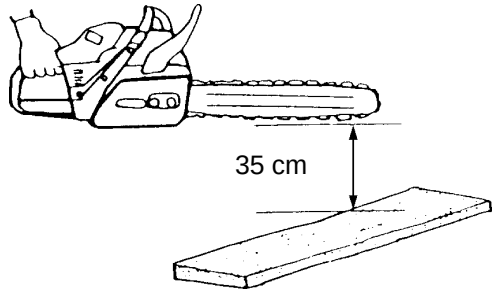
Do not allow the saw to tip forward in order to avoid damage to the chain.

If the chain does not stop immediately, return the saw to your authorized ECHO deafer for repair.

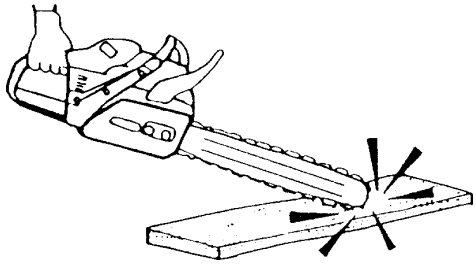
NOTE

- For practice, while cutting a small tree, push the lever forward to engage the brake.
- At all the time, confirm whether the brake works properly before each work.
- If the chain brake is clogged with wood chips, function of the brake deteriorates a little. Always keep the device clean.
- Do not increase engine revolution while the chain brake is engaged.
- Chain brake is used in emergencies. Do not use it unless absolutely necessary.
- When in use of throttle lock at starting, keep the chain brake position.
  And after starting the engine, release the brake immediately.
- Never test the brake in an area where gasoline fumes are present.

END OF THE GUIDE BAR may be placed at the height of about 35 cm.



Rear handle should be gripped lightly with the right handle.



AUTOMATIC CHAIN BRAKE

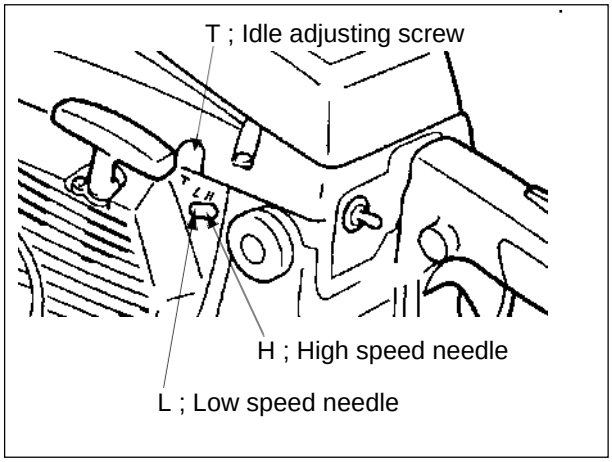
The automatic chain brake stops the operation of the saw chain in such a manner that kick-back action produced at the end of the guide bar automatically actuates the chain brake.
To make sure that the automatic chain brake operates properly, proceed as follows:

1) Stop the engine of the chain saw.
2) Operate the front and rear handles with hands (grip them lightly), so that the guide bar may be placed at the height of about 35 cm as shown in Fig.
3) Softly detach the left hand from the front handle, and touch the end of the guide bar against the wood or the like placed below so that the machine receives an impact.
   (* At this time the rear handle should be gripped lightly with right hand.)
4) The impact is propagated to the brake lever, which actuates the chain brake.

(PRECAUTION)

When checking the operation of the automatic chain brake, use a soft surface substance like wood to provide the impact so the chain is not damaged.

MAINTENANCE AND CARE



CARBURETTOR ADJUSTMENT

Every unit is run at the factory and the carburettor is set in compliance with California Emission Regulations. In addition, the carburetor is equipped with “H” (High Speed Needle) and “L” (Low Speed Needle) needle adjustment limited that prevent settings outside acceptable limits.

1. Before adjusting carburettor clean or replace air filter and muffler, “Spark Arrestor Screen”.
2. Make sure the cutting attachments such as bar and chain are properly adjusted.
3. Start engine and run several minutes to bring to operating temperature. Flash choke twice during warm-up to clear any air from the fuel system.
4. Stop engine.
   Turn “H” speed needle CCW to stop.
   Turn “L” speed needle midway between full CW stop and CCW stop.
5. Idle Speed Adjustment:
   - Start engine, turn “Idle” speed adjustment screw CW (clockwise) until the saw chain begins to turn, then turn screw out CCW (counter clockwise) until the saw chain stops turning.
     Turn screw out, CCW, an additional 1/4 turn.

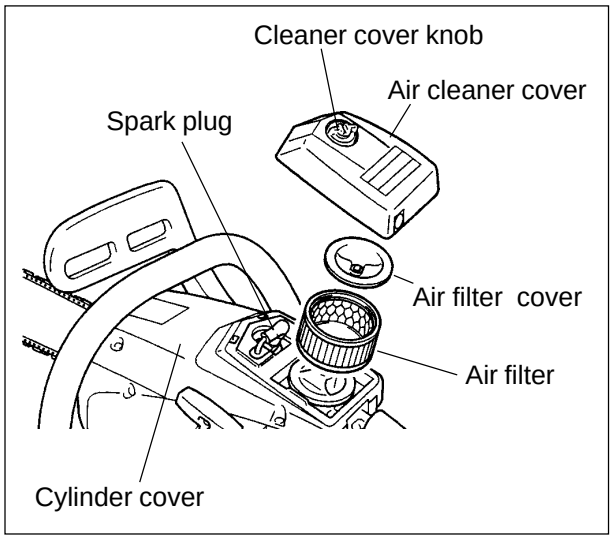
WARNING ⚠ DANGER

CUTTING ATTACHMENT MUST NOT TURN OR MOVE WHEN UNIT IS IDLING.

6. Accelerate to full throttle for 2 - 3 seconds to clear any excess fuel in the engine, then return to idle.
   Accelerate engine to full throttle to check for smooth transition from idle to high speed.
   If engine hesitates turn “L” needle CCW 1/8 turn and repeat acceleration.
   Continue adjustment until smooth acceleration results.
7. Check idle speed and reset if necessary as described in item 5. If a tachometer is available idle speed should be set as specified in the Instruction Manual.

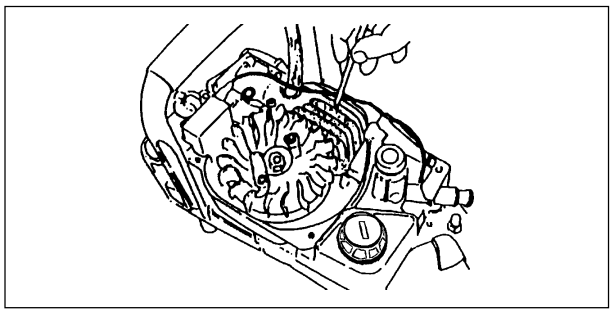
CAUTION

When starting, idling adjustment speed should be adjusted not to rotate the saw chain.
Correct idle speed is adjusted 2,900 to 3,100 r/min.
Or 1/4 turn counter clockwise from the point the chain stops moving.
When there is some trouble with the carburettor, refer to your distributor or dealer.



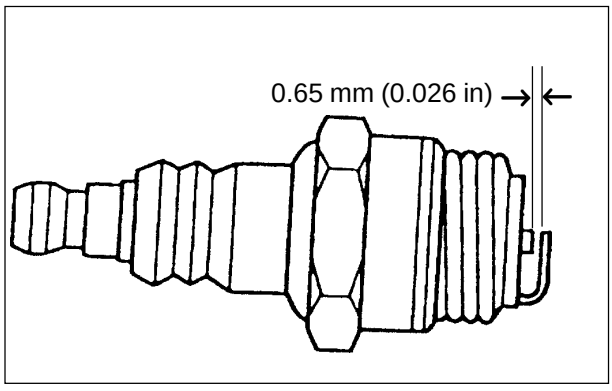
AIR FILTER

- Check before every use.
- Loosen cleaner cover knob and remove air cleaner cover and filter.
- Brush off dust lightly, or clean with compressed air, or replace the air filter.
- Reinstall filter and cover.



CYLINDER FINS

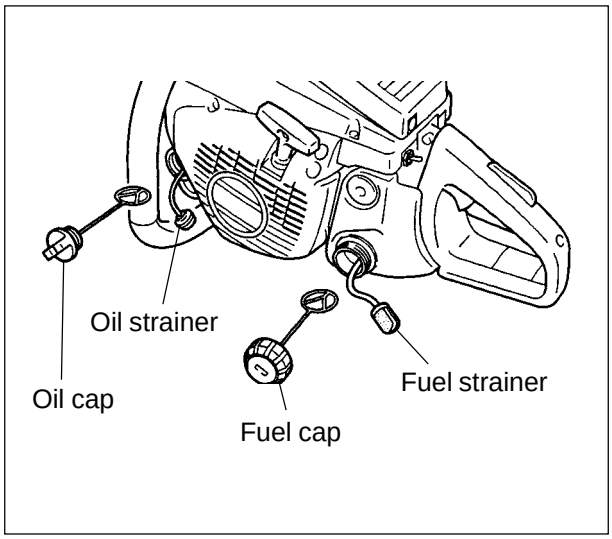
- Check periodically.
- Clogged fins will result in poor engine cooling.
- Remove dirt and dust from between fins to let cooling air pass easily.



SPARK PLUG

- Check periodically.
- The standard spark gap is 0.65 mm (0.026 in).
- Correct the spark gap if it is wider or narrower than the standard gap.
- Fastening torque : 14.2 to 15.2 N • m (125 to 135 in lb).

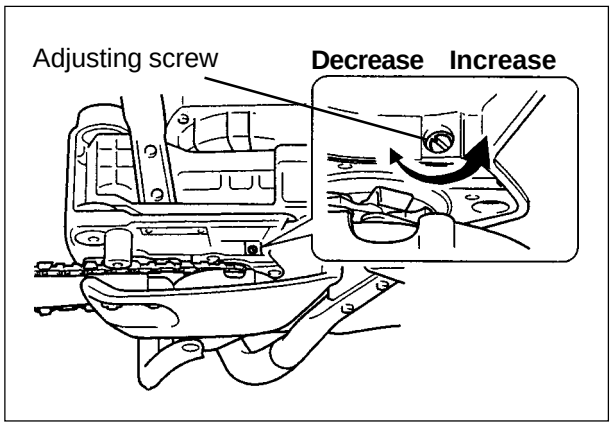
FUEL STRAINER



- Check periodically.
- Do not allow dust to enter fuel tank.
- Clogged strainer will cause difficulty in starting engine or abnormalities in engine performance.
- Pull the fuel strainer out through fuel inlet port with a piece of steel wire or the like.
- When the strainer is dirty, replace it.
- When the inside of the fuel tank is dirty, rinsing the tank out with gasoline can clean it.

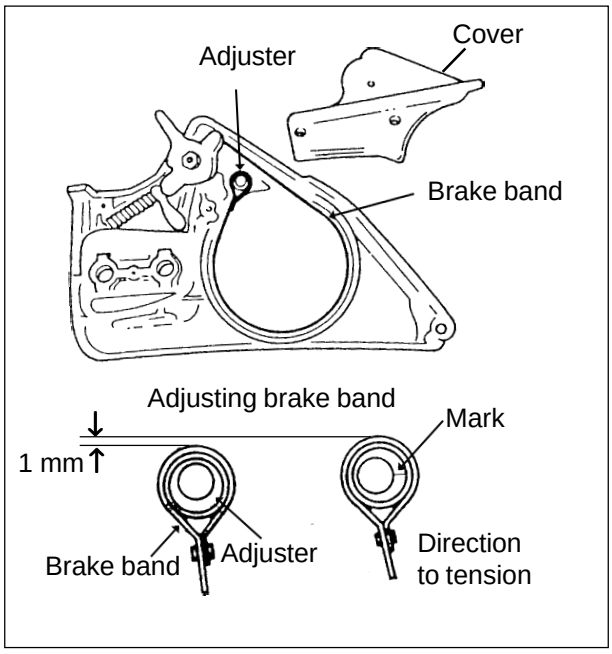
OIL STRAINER

- Check periodically.
- Do not allow dust to enter into oil tank.
- Clogged oil strainer will affect the normal lubricating system.
- Pull it out through oil filling hole with a piece of steel wire or the like.
- If the strainer is dirty, wash it in gasoline or replace it.
- When the inside of the tank gets dirty, rinsing the tank out with gasoline can clean it.



AUTOMATIC OILER

- The discharge volume of the automatic oiler is adjusted to 4 mL/min approx. at 7,000 r/min, prior to shipment from factory.
  - To increase the delivery volume, turn the adjusting screw counterclockwise. When the screw touches stopper and stops, this position indicates maximum discharge volume. (13 to 14 mL/min at 7,000 r/min)
  - Do not turn the adjusting screw beyond the max or min limit of volume adjustment.

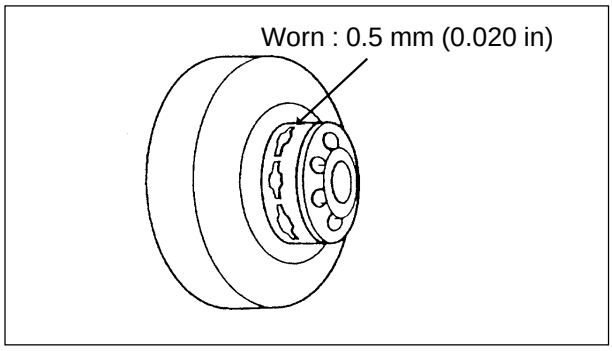


ADJUSTING THE CHAIN BRAKE

When brake band is worn or elongated, adjust the location of adjuster peak as follows.

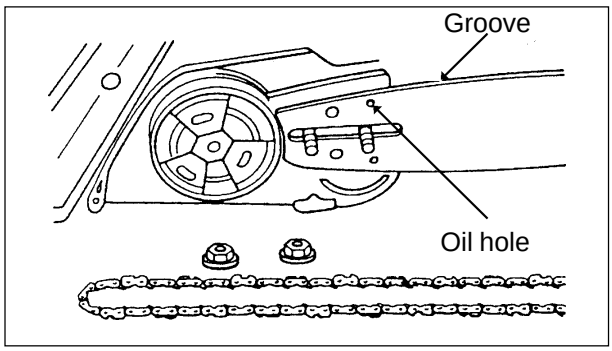
- Remove the clutch cover.
- Remove the cover and side plate.
- Turn adjuster position to set its peak to the correct tensioning location.
- Ensure that clutch drum can be turned freely by hand when brake handle is in cutting position (release position).

CAUTION
ECHO recommends that an authorized ECHO servicing dealer should service the chain brake.



SPROCKET

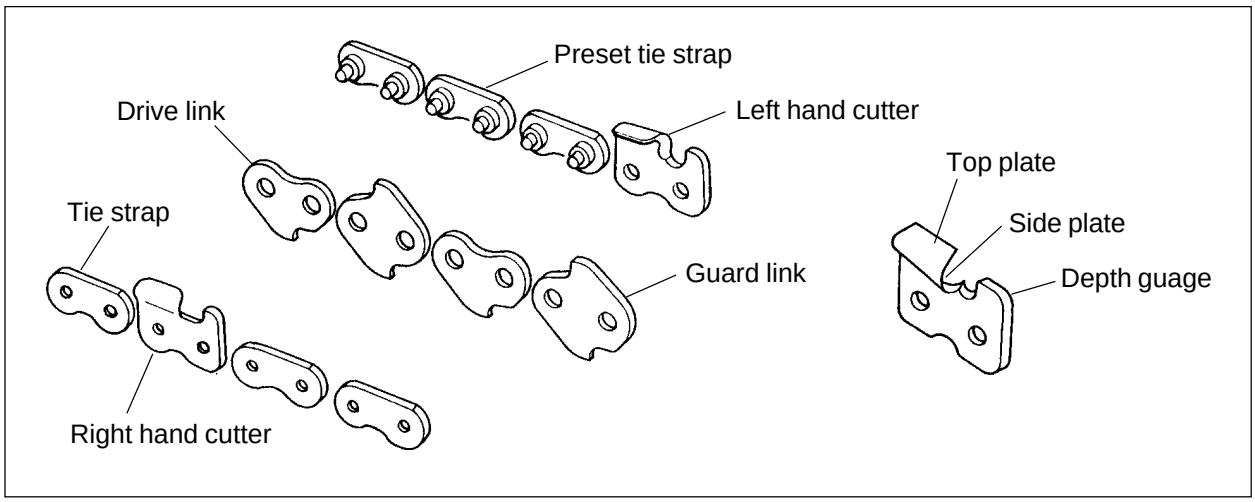
- The damaged sprocket will cause premature damage or wear of saw chain.
  - When the sprocket has worn out 0.5 mm (0.020 in) or more, replace it.
- Check sprocket when you install new chain. Replace it if worn.

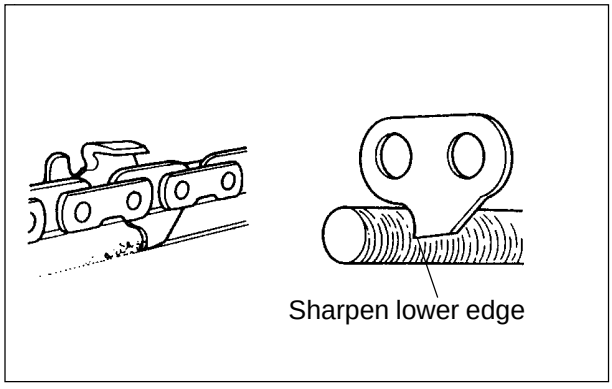


GUIDE BAR

- Clean before using.
  - Clean the groove of the guide bar with, for example, a small screwdriver.
  - Clean oil holes with a wire.
- Clean sprocket, clutch and bar mount area before installation of bar.

SETTING THE SAW CHAIN



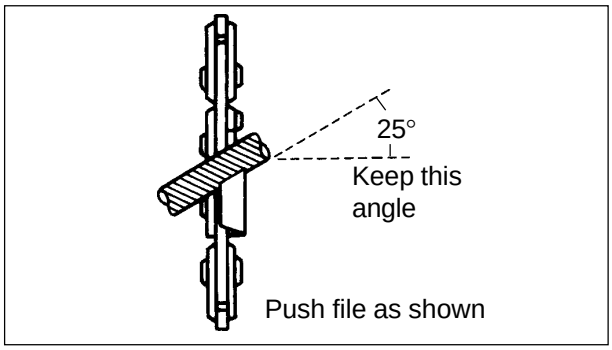


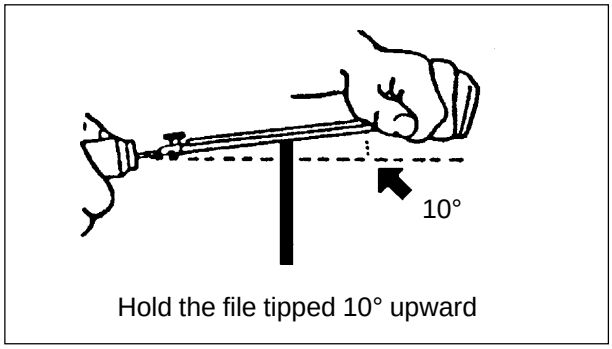
Important points for proper maintenance of saw chain:

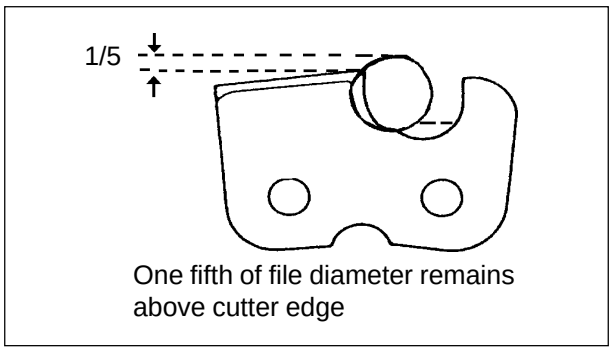
- Keep the cutters sharp at all times.
- Keep the left and the right cutters properly aligned.
  - Note that blunt or irregular cutters will result in poor cutting performance, increased vibration of chains and premature breakage of the saw chain.
- Drive link serves to remove sawdust from the groove of the guide bar.
  Therefore, keep the lower edge of the drive link, indicated by the arrow, sharp.

SETTING SAW CHAIN

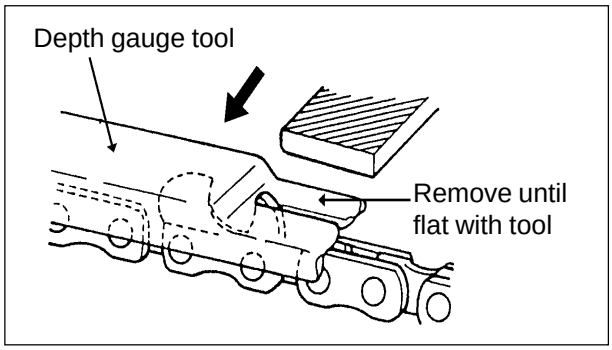
- For setting saw chain, round file (4 mm dia. 5/32 inch) and flat file are used.
- To keep correct position and correct angle, use the file holder (Sure Sharp).
  - Round file (P-No. 897510-03931) and flat file (P-No. 897511-00230) are optional.
  - Inquire about the file holder, if desired.

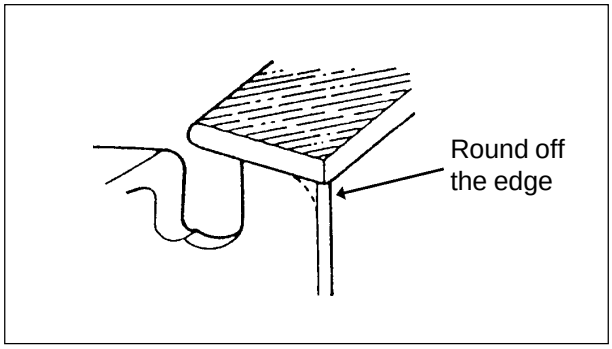






- Place the depth gauge tool firmly on guide bar so that depth gauge protrudes. Then file top of depth gauge with flat the file until flat with top of the depth gauge tool.
  - Be sure to round off the front edge of the depth gauge.

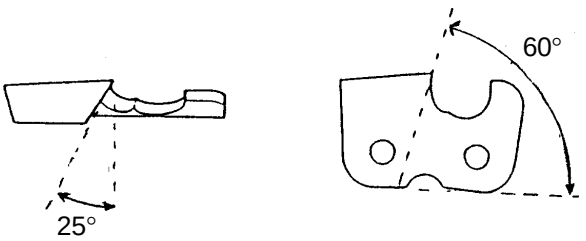




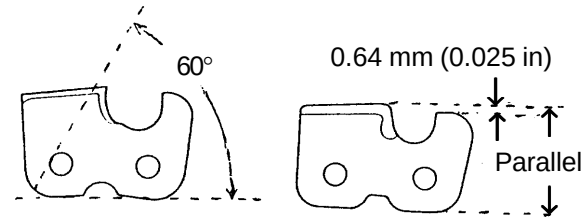
Properly filed cutters are shown as illustration.

When setting of the chain is finished, soak it in oil and wash away filings completely before using.

- When chain has been filed on the bar, supply sufficient oil to it, rotate the chain slowly to wash away the filings before using again.
- If the chain saw is operated with filings clogged in the groove, the saw chain and the guide bar will be damaged prematurely.
- If the saw chain becomes soiled with resin, for instance, clean it with kerosene and soak in it oil.



Top plate filing angle Side plate angle



Top plate cutting angle Depth gauge

NOTE

These angles are referred to as Oregon 33SL. To sharpen other follow chain manufacturer's instruction.

CHAIN AND GUIDE BAR COMBINATION

The following combinations are recommended to the model CS-510.

Guide Bar			Saw chain		
Length	ECHO Part No.		Pitch	Type	Links
mm (in)	Double Guard	Intenz	mm (in)		
@ 406 (16)	160336601	162336601	8.26 (0.325)	OREGON33SL	66
457 (18)	180337201	182337201	8.26 (0.325)	OREGON33SL	72
508 (20)	200337801	202337801	8.26 (0.325)	OREGON33SL	78

@ Standard configuration

GUIDE BAR

Replacement guide bars.
The following guide bars may be considered to have equivalent kickback energy.

- Sprocket nose guide bars of the same length and nose radius, same pitch and having the same number of teeth.
- A hard nose guide bars of the same length and nose radius as a sprocket nose bar.

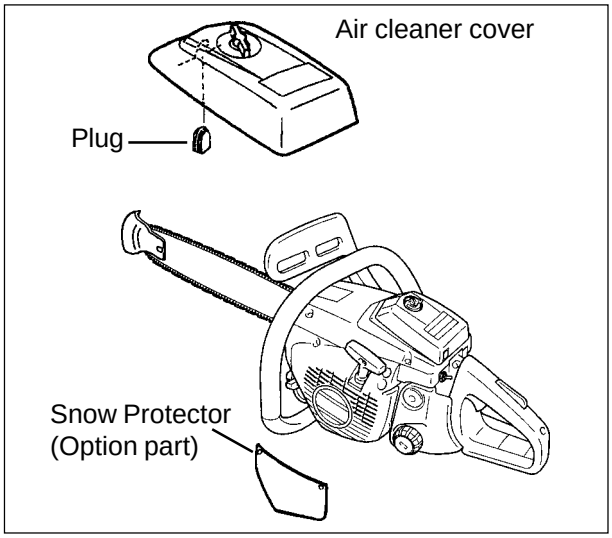
SAW CHAIN

CAUTION

Do not use replacement saw chain unless it has been designated as meeting the CSA Z 62.3 kickback performance requirements.

NOTE

LOW KICKBACK SAW CHAIN is the chain which has met the kickback performance requirements of CSA Z 62.3 (safety requirements for gasoline-powered chain saws).



WINTER KIT

Use the winter kit with chain saw to prevent a carburettor's trouble in winter season.
Installation of the kit is as follows.

- AIR CLEANER COVER - Remove air cleaner cover. Remove plug provided inside of the cover.
- SNOW PROTECTOR (Option) - Snow protector prevents that snow gets into the unit by fan cover in snow fall or laying snow.
- Set the protector hook (2pcs) to the fan cover. Ensure that the setting direction is correct as shown.
- Tighten two screws to fasten the snow protector.

CAUTION

Do not use these parts in normal temperature.
It causes over heating of the engine.

SERVICE GUIDE

AREA	MAINTENANCE	PAGE	With Each Re-Fueling	Before use	Daily or every 4 Hours use	Monthly	Every Three Months or 100 Hours use	Six Months or 300 Hours use	Every year or 600 Hours use
Air Filter	Clean				•				
	Replace	18					•		
Fuel Filter	Clean								
	Replace	19					•		
Spark Plug	Clean						•		
	Replace	18						•	
Carburettor	Check/Rebuild							•	
	Replace	17							① •
Cooling System	Inspect/Clean	18		•					
Muffler	Inspect/Clean	-					•		
Oil Filter	Inspect/Replace	19		•					
Sprocket	Inspect/Replace	20				•			
Starter Rope	Inspect/Replace	-				•			
Guide Bar	Inspect/Clean	20		•					
Fuel System	Inspect/Repair	-		•					
Screws, Bolts & Nuts	Inspect, Tighten/Replace			•					
Choke System	Check	10	•						
Ignition System	Clean/Replace	NO MAINTENANCE REQUIRED FOR COIL AND FLYWHEEL							

① Replacement will be required for commercial use after 600 hours.
For consumer use, cleaning every 6 months is required.
Cleaning includes Rebuild kits.

IMPORTANT

Time intervals shown are maximum.
Actual use and your experience will determine the frequency of required maintenance.

TROUBLE SHOOTING

Problem			Cause	Remedy
Engine starts hard / does not start				
Engine Cranks ↓	Fuel at carburettor →	No fuel at carburettor	• Fuel strainer clogged • Fuel line clogged • Carburettor	• Clean • Clean • Ask your ECHO dealer
↓	Fuel at cylinder →	No fuel at cylinder	• Carburettor	• Ask your ECHO dealer
↓	↓ →	Muffler wet with fuel	• Fuel mixture is too rich	• Open choke • Clean/replace air filter • Adjust carburettor • Ask your ECHO dealer
↓	Spark at end of plug wire	No spark at end of plug wire	• Ignition switch off • Electrical problem	• Turn switch on • Ask your ECHO dealer
↓	↓ Spark at plug → ↓	No spark at plug	• Spark gap incorrect • Covered with carbon • Fouled with fuel • Spark plug defective	• Adjust 0.6 mm to 0.7 mm (0.024 to 0.028 in) • Clean or replace • Clean or replace • Replace plug
Engine does not crank			• Internal engine problem	• Ask your ECHO dealer
Engine runs ↓	Dies or Accelerates poorly ↓		• Air filter dirty • Fuel filter dirty • Fuel vent blocked • Spark plug • Carburettor • Cylinder fins blocked • Exhaust port port/spark arrestor screen blocked	• Clean or replace • Replace • Clean • Clean and adjust/replace • Adjust • Clean • Clean

STORAGE AFTER USE

- Inspect and adjust every part of the chain saw.
  - Completely clean every part and repair if necessary.
  - Apply thin coating of oil on metal parts to prevent rust.
- Remove chain and guide bar, apply sufficient oil coating and wrap them up in plastic sheet.
- Drain fuel tank, pull starter slowly a few times to drain fuel from carburettor.
- Pour a small amount of clean motor oil into spark plug hole, pull starter and crank the engine until the TOP DEAD CENTER.
- Store in a dry area, free from dust.

WARNING ⚠ DANGER

DO NOT STORE IN ENCLOSURE WHERE FUEL FUMES MAY ACCUMULATE OR REACH AN OPEN FLAME OR SPARK.

NOTE

For future reference, you should keep this operator's manual.

CAUTION

Do not lend and rent your chain saw without the Operator's manual, Safety manual and Kick-guard instruction.

TECHNICAL DATA

			CS - 510
Dimension	L x W x H	mm	398 x252x 272 (15.7 in x 9.9 in x 10.7 in)
Masses	Power head, dry	kg	4.9 (10.8 lb) Without chain and guide bar
Engine	Type		Air-cooled two-stroke single cylinder
	Displacement	mL (cm^3)	49.3 (3.00 cu in)
	Carburettor Magneto Spark plug Starter Power transmission		Diaphragm type Flywheel magneto : CDI system CHAMPION RCJ-6Y Recoil starter Automatic centrifugal clutch
Fuel	Mixture ratio		50 : 1 ratio with ECHO brand two-stroke oil. 89 octane unleaded. Do not use fuel containing methyl alcohol, more than 10% ethyl alcohol or 15% MTBE.
	Tank capacity	L	0.60 (20.3 US fl oz)
Oil	Bar and chain		ECHO bar and chain oil (or motor oil)
	Tank capacity	L	0.28 (9.5 US fl oz)
Guide bar and saw chain			See page 22 for Chain and Guide Bar Combination
	Lubrication		Adjustable automatic oil pump
Standard features			Front hand guard, Rear hand guard Anti-vibration, Spiked bumper Throttle control lockout, Chain brake Chain catcher, Spark arrestor muffler, Kick guard

* Technical data subject to change without notice.